

Conference Abstract

Applying Design Thinking in Revising Data Curation of Taiwanese Herbaria

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Abstract

Herbaria in Taiwan face critical data challenges:

1. Different taxonomic views prevent data exchange;
2. There is a lack of development practices to keep up with standard and technological advances;
3. Data is disconnected from researchers' perspective, thus it is difficult to demonstrate the value of taxonomists' activities, even though a few herbaria have their specimen catalogue partially exposed in Darwin Core.

In consultation with the Herbarium of the Taiwan Forestry Research Institute (TAIF), the Herbarium of the National Taiwan University (TAI) and the Herbarium of the Biodiversity Research Center, Academia Sinica (HAST), which together host most important collections of the vegetation on the island, we have planned the following activities to address data challenges:

1. Investigate a new data model for scientific names that will accommodate different taxonomic views and create a web service for access to taxonomic data;
2. Refactor existing herbarium systems to utilize the aforementioned service so the three herbaria can share and maintain a standardized name database;
3. Create a layer of Application Programming Interface (API) to allow multiple types of accessing devices;

4. Conduct behavioral research regarding various personas engaged in the curatorial workflow;
5. Create a unified front-end that supports data management, data discovery, and data analysis activities with user experience improvements.

To manage these developments at various levels, while maximizing the contribution of participating parties, it is crucial to use a proven methodological framework. As the creative industry has been leading in the area of solution development, the concept of design thinking and design thinking process (Brown and Katz 2009) has come to our radar. Design thinking is a systematic approach to handling problems and generating new opportunities (Pal 2016). From requirement capture to actual implementation, it helps consolidate ideas and identify agreed-on key priorities by constantly iterating through a series of interactive divergence and convergence steps, namely the following:

1. Empathize: A divergent step. We learn about our audience, which in this case includes curators and visitors of the herbarium systems, about what they do and how they interact with the system, and collate our findings.
2. Define: A convergent step. We construct a point of view based on audience needs.
3. Ideate: A divergent step. We brainstorm and come up with creative solutions, which might be novel or based on existing practice.
4. Prototype: A convergent step. We build representations of the chosen idea from the previous step.
5. Test: Use the prototype to test whether the idea works. Then refine from step 3 if problems were with the prototyping, or even step 1, if the point of view needs to be revisited.

The benefits by adapting to this process are:

1. Instead of “design for you”, we “design together”, which strengthens the sense of community and helps the communication of what the revision and refactoring will achieve;
2. When put in context, increased awareness and understanding of biodiversity data standards, such as Darwin Core (DwC) and Access to Biological Collections Data (ABCD);
3. As we lend the responsibility of process control to an external facilitator, we are able to focus during each step as a participant.

We illustrate how the planned activities are conducted by the five iterative steps.

Keywords

Curatorial behaviour, Design thinking, herbarium

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References

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